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PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Translation

PCT Application

PCT/JP2002/010844



Applicant's or agent's file reference 310200535971	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP02/10844	International filing date (day/month/year) 18 October 2002 (18.10.02)	Priority date (day/month/year)
International Patent Classification (IPC) or national classification and IPC H01L 21/3065		
Applicant HITACHI, LTD.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 27 November 2002 (27.11.02)	Date of completion of this report 22 October 2003 (22.10.2003)
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP02/10844

I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages _____ 1-16 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____ 2, 4, 6, 16-18, 20 _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages _____ 1, 5, 15, 19 _____, filed with the letter of _____ 20 June 2003 (20.06.2003)
- ☒ the drawings:
 pages _____ 1/9-9/9 _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
 These elements were available or furnished to this Authority in the following language _____ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. _____ 3, 7-14 _____
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International Application No.

PCT/JP02/10844

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	16-20	YES
	Claims	1, 2, 4-6, 15	NO
Inventive step (IS)	Claims	16-20	YES
	Claims	1, 2, 4-6, 15	NO
Industrial applicability (IA)	Claims	1, 2, 4-6, 15-20	YES
	Claims		NO

2. Citations and explanations

The following are cited in the ISR.

Cited document 1: JP, 2002-93870, A (Toshiba Corporation)

Cited document 2: US, 5792376, A (Toshiba Corporation)

Cited document 3: JP, 06-177219, A (Mitsubishi Electric Corporation)

Claims 1, 2 and 4-6

In the invention described in document 1, the movement of a reflectance spectrum in the long wave direction in accordance with the layer thickness of an insulating layer provided on a wiring layer 30 is used to measure layer thickness, and the etching depth is specified thereby. Therefore, not just the "film thickness data" and "pattern data," but also the "shift distance in the axial direction of a wavelength" are found to be used for measuring etching depth, and the inventions described in claims 1, 2 and 4-6 are found to be inventions disclosed in document 1.

Claim 15

Document 3 describes measuring etching depth of an etched portion by change of capacitance between the replica and a silicon substrate without taking the replica out of a conductive liquid poured in an etching portion of an etched film, and it is clear that the change of the capacitance before and after etching is equivalent to the capacitance difference between a flat part and a hole part; therefore, the invention described in claim 15 is found to be disclosed in document 3.

Claims 16-20

Documents 1-3 do not describe causing the measurement electrode described in document 3 to scan above a semiconductor wafer, providing a measurement electrode in a load lock chamber and an unload lock chamber, providing a plurality of projecting electrodes, the diameter of a second electrode tip, and the distance between the second electrode and a semiconductor wafer surface; nor could these matters be easily conceived by a party skilled in the art based on the descriptions in these documents.